



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

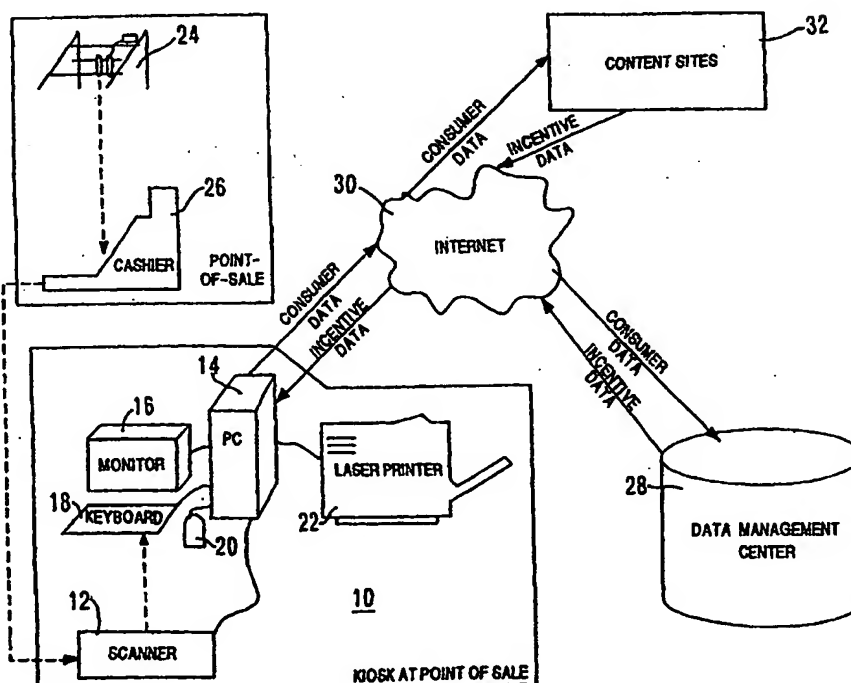
|   |  |   |   |
|---|--|---|---|
| (51) International Patent Classification <sup>6</sup> :<br>G06F 17/60, 17/00, 15/00, 15/24, 15/26   |  | A1  | (11) International Publication Number: WO 00/05668              |
|   |  |   | (43) International Publication Date: 3 February 2000 (03.02.00) |
| (21) International Application Number: PCT/US99/16266<br>(22) International Filing Date: 23 July 1999 (23.07.99)<br>(30) Priority Data:<br>60/093,902 23 July 1998 (23.07.98) US<br>(71) Applicant: NEOMEDIA TECHNOLOGIES, INC. [US/US];<br>Suite 600, 2201 Second Street, Fort Myers, FL 33901 (US).<br>(72) Inventors: ZUIFF, Igor; Suite 600, 2201 Second Street, Fort<br>Myers, FL 33901 (US). SPRUILL, Quentin, E.; Suite 600,<br>2201 Second Street, Fort Myers, FL 33901 (US). HILL,<br>John; Suite 600, 2201 Second Street, Fort Myers, FL 33901<br>(US). ZUIFF, Jennifer; Suite 600, 2201 Second Street, Fort<br>Myers, FL 33901 (US).<br>(74) Agent: BARKUME, Anthony, R.; Anthony R. Barkume, P.C.,<br>Suite 200, 14 South Main Street, Sayville, NY 11782 (US). |  | (81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG,<br>BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB,<br>GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,<br>KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK,<br>MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,<br>SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW,<br>ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG,<br>ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ,<br>TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI,<br>FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent<br>(BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE,<br>SN, TD, TG).<br><br>Published<br>With international search report.<br>Before the expiration of the time limit for amending the<br>claims and to be republished in the event of the receipt of<br>amendments. |   |

(54) Title: METHOD AND APPARATUS FOR OBTAINING CONSUMER DATA IN EXCHANGE FOR CONSUMER INCENTIVES VIA A NETWORKED RESOURCE

## (57) Abstract

A method and apparatus for obtaining consumer data in exchange for consumer incentives at a point-of-sale including a scanner (12), a personal computer (14), a monitor (16), a mouse (20), and a laser printer (22). A consumer selects merchandise from a display and purchases it. Thereafter, the consumer enters a kiosk enclosing the apparatus and scans a machine-readable code on one or more tags affixed to the merchandise. A registration form is displayed, which the consumer completes by inserting demographic data. Consumer data comprising the merchandise data and demographic data is transmitted via the Internet to a data management center for storage, collation, analysis and distribution. Upon receipt of the

consumer data optionally including the results or outcome of the game via the Internet, the data management center provides the apparatus with incentive data via the Internet. The incentive data is printed on the laser printer (22) and made available to the consumer.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

|    |                          |    |  |    |  |    |                          |
|----|--------------------------|----|--|----|--|----|--------------------------|
| AL | Albania                  | ES | Spain                                    | LS | Lesotho                                      | SI | Slovenia                 |
| AM | Armenia                  | FI | Finland                                  | LT | Lithuania                                    | SK | Slovakia                 |
| AT | Austria                  | FR | France                                   | LU | Luxembourg                                   | SN | Senegal                  |
| AU | Australia                | GA | Gabon                                    | LV | Latvia                                       | SZ | Swaziland                |
| AZ | Azerbaijan               | GB | United Kingdom                           | MC | Monaco                                       | TD | Chad                     |
| BA | Bosnia and Herzegovina   | GE | Georgia                                  | MD | Republic of Moldova                          | TG | Togo                     |
| BB | Barbados                 | GH | Ghana                                    | MG | Madagascar                                   | TJ | Tajikistan               |
| BE | Belgium                  | GN | Guinea                                   | MK | The former Yugoslav<br>Republic of Macedonia | TM | Turkmenistan             |
| BF | Burkina Faso             | GR | Greece                                   | ML | Mali   | TR | Turkey                   |
| BG | Bulgaria                 | HU | Hungary                                  | MN | Mongolia                                     | TT | Trinidad and Tobago      |
| BJ | Benin                    | IE | Ireland                                  | MR | Mauritania                                   | UA | Ukraine                  |
| BR | Brazil                   | IL | Israel                                   | MW | Malawi                                       | UG | Uganda                   |
| BY | Belarus                  | IS | Iceland                                  | MX | Mexico                                       | US | United States of America |
| CA | Canada                   | IT | Italy                                    | NE | Niger  | UZ | Uzbekistan               |
| CF | Central African Republic | JP | Japan                                    | NL | Netherlands                                  | VN | Viet Nam                 |
| CG | Congo                    | KE | Kenya                                    | NO | Norway                                       | YU | Yugoslavia               |
| CH | Switzerland              | KG | Kyrgyzstan                               | NZ | New Zealand                                  | ZW | Zimbabwe                 |
| CI | Côte d'Ivoire            | KP | Democratic People's<br>Republic of Korea | PL | Poland                                       |    |                          |
| CM | Cameroon                 | KR | Republic of Korea                        | PT | Portugal                                     |    |                          |
| CN | China                    | KZ | Kazakhstan                               | RO | Romania                                      |    |                          |
| CU | Cuba                     | LC | Saint Lucia                              | RU | Russian Federation                           |    |                          |
| CZ | Czech Republic           | LI | Liechtenstein                            | SD | Sudan  |    |                          |
| DE | Germany                  | LK | Sri Lanka                                | SE | Sweden                                       |    |                          |
| DK | Denmark                  | LR | Liberia                                  | SG | Singapore                                    |    |                          |
| EE | Estonia                  |    |  |    |  |    |                          |

**METHOD AND APPARATUS FOR OBTAINING CONSUMER DATA IN EXCHANGE  
FOR CONSUMER INCENTIVES VIA A NETWORKED RESOURCE**

**CROSS-REFERENCE TO RELATED APPLICATIONS**

5           This patent application is based on and claims  
filing priority of co-pending U.S. provisional application  
serial number 60/093,902, filed on July 23, 1998.

**TECHNICAL FIELD**

10           This invention relates to a method and apparatus for  
obtaining consumer data in exchange for consumer incentives  
via the Internet.

**BACKGROUND ART**

15           Competition between manufacturers in the shoe and  
clothing industry is typically intense. The purchase of such  
goods is often guided by the consumer's perception of the  
manufacturer and its goods. Advertisement agencies are forced  
to undergo a continuous quest for new and innovative methods  
20           of appealing to the intended market, promoting the product,  
increasing the demand for the product, and improving customer  
loyalty.

          Therefore, a cost effective apparatus and method  
25           which could increase the demand for a product and maintain  
customer loyalty once the purchase is made would be extremely  
advantageous to the manufacturer.

          In order to consistently achieve these goals the  
30           manufacturer must have access to detailed and current customer  
demographics as well as information on the particular article  
of manufacture including demand, flow through the distribution  
chain, supply, and selling price. The demand for accurate

information of this type is extremely high. Such information is crucial to many related industries such as garment workers unions, textile importers and manufacturers as well as other providers of raw materials and labor. The major problem in obtaining this information is the consumer's unwillingness to provide accurate and detailed information regarding himself, his lifestyle and the purchase once the purchase has been made.

Therefore, an apparatus and method that could provide comprehensive and accurate information on the eventual consumer as well as the particular product or article purchased would be advantageous to the manufacture of the article as well as those in related industries.

Due to the increasing popularity, convenience and success of national chains of "SUPER STORES", the livelihoods of smaller stores have suffered to the point of extinction. Such factors as discounts and efficiency created by vast volumes of goods being delivered to the consumer make it extremely difficult for smaller stores to compete with large chains. Efforts by smaller stores to align themselves or co-market with other similarly situated stores can be complex, costly and is generally ineffective.

Therefore, an apparatus and method that facilitates co-marketing and other alliances among businesses in a cost effective manner would be extremely advantageous to such businesses.

In addition, as the cost of shoes and clothing increase so too must the reduction in the selling price provided by coupons and other means for providing discounts.

The increased value of these discounts increases the incentive for committing fraud during the redemption of these discounts, which can severely reduce profits and undermine the manufacturer's purpose in providing these discounts.

5

Therefore, an apparatus and method that would increase security against fraud committed during the redemption of discounts would be advantageous to the provider of such incentives.

10

#### **DISCLOSURE OF THE INVENTION**

In accordance with the present invention, a method and apparatus for obtaining consumer data in exchange for consumer incentives is provided comprising a scanner, a personal computer, a monitor, a mouse and a laser printer. A consumer selects merchandise from a display and transports the merchandise to a cashier in order to complete the purchase. Thereafter, the consumer enters a kiosk or other definable area enclosing the apparatus and scans a machine-readable or bar code on one or more tags affixed to the merchandise. Scanning the bar code associated with the merchandise provides the personal computer with merchandise data. A registration form is then displayed on the monitor, which the consumer completes by inserting demographic data. Consumer data comprising the merchandise data and demographic data is transmitted via the Internet to a data management center for storage, collation, analysis and distribution.

15

20

25

30

In further accordance with the present invention, the consumer is provided the benefit of playing a game on the personal computer in exchange for the burden of scanning the shoes and completing the registration form. Upon receipt of the consumer data optionally including the results or outcome

of the game via the Internet, the data management center provides the apparatus with incentive data via the Internet. The incentive data is printed on the laser printer and made available to the consumer. The consumer receives diskettes of software or information on downloading of software from the Internet that permits the consumer to play additional games and win further incentives at other locations such as in the home of the consumer.

In still further accordance with the present invention, a method and apparatus for obtaining consumer data in exchange for consumer incentives is provided at a location remote from the point-of-sale.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 illustrates a first embodiment of an apparatus for obtaining consumer data in exchange for consumer incentives of the present invention, which is located at a point-of-sale.

Fig. 2 illustrates a second embodiment of the apparatus illustrated in Fig. 1, which is remotely located from the point-of-sale.

Fig. 3 is a relational flowchart illustrating a method for using the apparatus illustrated in Fig.1.

Fig. 4 is a relational flowchart illustrating a method for using the apparatus illustrated in Fig.2.

Figs. 5A and 5B illustrate tags affixed to merchandise for use in accordance with the present invention.

Fig. 6 illustrates a perspective drawing of a kiosk enclosing the apparatus of the present invention illustrated in Fig. 1.

5      **BEST MODE FOR CARRYING OUT THE INVENTION**

10      Fig. 1 illustrates a first embodiment of an apparatus 10 for obtaining consumer data in exchange for consumer incentives of the present invention, which is located at a point-of-sale such as a retail shoe outlet. The apparatus 10 comprises a scanner 12, a keyboard 18, a workstation or personal computer (PC) 14, a monitor 16, a joystick, mouse or pointing tool 20 and a laser printer 22. A consumer selects a pair of shoes from a display 24 and transports the shoes to a cashier 26 in order to complete the purchase. Thereafter, the consumer enters a kiosk or other  
15      definable area comprising the apparatus 10.

20      Once inside the kiosk, the consumer scans a machine-readable symbol (e.g. a bar code) on one or more tags affixed to the product such as a pair of shoes (or on a symbol embedded on the product itself) using the scanner 12 connected to the personal computer 14. The scanning of the symbol such as a bar code associated with the shoes provides the personal computer 14 with merchandise-specific data such as the  
25      manufacturer, style, product designation, model, size, store purchased, and date of the purchase as well as any other information encoded on the tags. A registration form is then displayed on the monitor 16, which the consumer completes using the attached keyboard 18 and mouse 20 by inserting  
30      demographic data such as age, occupation, salary, hobbies, name, and address as well as additional purchase and merchandise data potentially not found on the tags such as the purchase price, factors contributing to final selection, and

product preferences. Consumer data comprising the merchandise data and demographic data is transmitted via a computer link such as the Internet 30 to a data management center 28 for storage, collation, analysis and distribution. The personal computer 14 may automatically label the consumer data with temporal data such as the time and date of the purchase.

In exchange for the burden of scanning the product and completing the registration form, the consumer is provided the benefit of playing a game on the personal computer 14 using the keyboard 18, joystick or mouse 20, and monitor 16. Upon receipt of the consumer data optionally including the results or outcome of the game via the Internet 30, the data management center 28 provides the apparatus 10 with incentive data via the Internet 30. The incentive data can take the form of a coupon for additional purchases in the same or a different store. The coupon is printed on the laser printer 22 and made available to the consumer. The incentive can be offered to the consumer as printed material from the laser printer 22 (e.g., the coupon), as an identification or loyalty card, or as visual and/or audible information, informing the consumer where she can enter her registered information or an identification code for further incentives. The consumer optionally receives diskettes of software or information on downloading of software from the Internet that permits the consumer to play additional games and win further incentives at other locations such as in the home of the consumer.

Incentives can also take the form of providing access to content sites 32 comprising information relevant to the merchandise purchased such as the fan club of a professional athlete who has endorsed the particular style of shoe purchased. The content sites 32 can then obtain



additional consumer data from the consumer via the Internet 30  
and provide additional incentive data such as membership in  
the fan club, tickets to sporting events at reduced prices,  
merchandised endorsed by a team, or the season schedule for a  
5 team.

The data management center 28 acts as a central  
repository for the consumer data. The data management center  
28 collects, processes, analyzes, markets, distributes or  
10 resells or makes the consumer data available to interested  
parties or entities such as the manufacturer. In this way  
vital and accurate consumer data can be collected at the  
point-of-sale where the interest of the consumer is at its  
peak.

15 Fig. 2 illustrates a second embodiment of an  
apparatus 10 for obtaining consumer data in exchange for  
consumer incentives of the present invention, which is located  
remotely from the point-of-sale such as in the home of the  
20 consumer. Substantially the same elements and procedures  
apply with respect to the second embodiment as described above  
with respect to the first embodiment except that the scanner  
12 is optional since it is anticipated that many consumers may  
not have access to such an input device. Rather than scanning  
25 the shoes, the consumer may instead input the alphanumeric  
representation of the coded information appearing on the tag  
via the keyboard in order to provide the data management  
center 28 with merchandise data and gain access to incentives.  
In the second embodiment, the consumer is provided with  
30 information for accessing Internet sites containing the  
registration form during her purchase of the merchandise at  
the point-of-sale. Vital and accurate consumer data can still  
be collected using the second embodiment since consumer

incentives such as games and coupons induce the consumer to participate in the registration process even after the purchase has been completed at a location remote from the point-of-sale.

5

Fig. 3 illustrates a relational flowchart that associates the steps in using the first embodiment of the apparatus 10 illustrated in Fig. 1 to the party or service performing the particular step such as the consumer, Internet, data management center or content site. The consumer first selects the shoes or merchandise and purchase it at the cashier. Thereafter, the consumer takes the merchandise to the kiosk and scans the tag or tags, which provides merchandise data to the data management center via the Internet. The consumer then completes the registration form appearing on the monitor by entering appropriate responses on the keyboard.

10

15

20

25

30

The completion of the registration form provides demographic data to the data management center via the Internet. The consumer then selects and plays a game on the apparatus and the game results are provided to the data management center via the Internet. The data management center monitors, records, processes, analyzes and distributes consumer data comprising merchandise data, demographic data and game results to interested parties or entities such as the manufacturer. The data management center can optionally determine the appropriate incentive data based upon the results of the game (i.e., whether the consumer won or lost the game) and transmit that incentive data to the apparatus via the Internet. The data management center optionally encodes and the apparatus optionally provides "secure document" enabled incentive data resulting in a secure

incentive document, coupon, or certificate using apparatus and techniques disclosed in U.S. Appl. Nos. 60/058,153 and 09/075,238, which are hereby incorporated by reference.

5           As a form of further incentive, the consumer is provided with access to content sites comprising information relevant to the merchandise purchased. This access may required the input of additional consumer data which is monitored, recorded, processed, analyzed, resold or  
10 distributed by the content site. The incentive data is transmitted to the apparatus in order to make additional incentives available to the consumer. The consumer obtains access information to additional incentives such as Internet sites and games in the form of, for instance, diskettes or  
15 Internet site addresses displayed on the monitor.

Fig. 4 illustrates a relational flowchart that associates the steps in using the second embodiment of the apparatus 10 illustrated in Fig. 2 to the party or service performing the step, which is substantially similar to those of Fig. 3 except that the steps following the purchase of the merchandise are performed at a location remote to the point-of-sale such as in the home of the consumer. In addition, since the consumer is not likely to own a scanner the  
25 merchandise data may optionally be read from the tag and entered as alphanumeric characters via the keyboard.

The incentives offered to the consumer as an inducement to participate in providing consumer data can be  
30 games, credits for additional games, gift certificates, lotteries, sweepstakes, tickets to sporting events, team memorabilia, team endorsed merchandise, training camps, sporting goods, certificates of participation, toys, coupons,

identification, loyalty or membership cards, prizes, access to networked resource chat groups and the like.

5 The means for communication between the apparatus of the present invention and the data management center or content sites can be the Internet or alternative networked resources well known in the art.

10 The merchandise tagged in accordance with the present invention can be clothing, sporting goods, toys, musical instruments or any type of goods sold, leased, rented, transferred or conveyed. The present invention could also be used in connection with the sale of services by furnishing a tag to the consumer upon the purchase of services.

15 The apparatus and method of the present invention permit the co-marketing of multiple retail providers by linking incentives triggered by the purchase of merchandise in one store to discounts on merchandise in different stores.

20 Fig. 5A illustrates two tags affixed to a pair of shoes and Fig. 5B illustrates two tags affixed to a shirt. The size of the tags has been increased disproportionately to the merchandise in order to illustrate the detail of the tag. 25 A Universal Product Code (UPC) tag 34 comprises machine-readable code such as one-dimensional code, which typically provides manufacturer and product identification information. An additional tag or tags 36 can be affixed to the merchandise in order to convey additional information such as the serial 30 number of individual articles of merchandise rather than merely a model or style designation of a class of merchandise using a machine-readable code of the same or greater complexity such as two-dimensional bar code. In addition to

the machine-readable code provided on the tags, alphanumeric representations of the contents of these codes is provided on the tags to enable entry of the coded information when a scanner is unavailable such as in the second embodiment of the present invention illustrated in Figs. 2 and 4. Greater detail regarding machine readable codes is disclosed in U.S. Pat. No. 5,504,322, which is hereby incorporated by reference.

The scanner can be any type of scanner capable of scanning machine-readable symbology such as a bar code scanner, scanning wand, a scanner activated by a trip pedal or a set of boots on the apparatus 10 on which the consumer places her fee while wearing the shoes or merchandise comprising the tag as illustrated in Fig. 6. The scanner could also be located at any height and location and still be within the scope of the present invention. The apparatus 10 illustrated in Fig. 6 is adapted for a seated consumer at the point-of-sale and comprises the monitor 16, keyboard 18, mouse 20, joystick 21, laser printer 22 and scanner 12.

The tags can be attached to the goods as illustrated in Fig. 5A and 5B or embossed in the fabric, rubber or material of the goods.

The information provided to the consumer regarding access to further incentives can be made available to the consumer on diskettes containing software enabling access to additional Internet and networked resource sites or on a tear-off sheet provided with the merchandise at the display, the cashier or the kiosk.

The machine-readable symbol may have encoded therein the resource location (i.e. URL) of the computer on the

Internet, which allows easy connection to a desired server for exchanging appropriate information therewith. In this case, the scanner would read the URL from the bar code symbol and cause the computer to access the appropriate network resource(s) by utilizing the decoded URL.

Although the invention has been shown and described with respect to best mode embodiments thereof, it should be understood by those skilled in the art that the foregoing and various other changes, omissions and additions in the form and detail thereof may be made therein without departing from the spirit and scope of the present invention.

**WE CLAIM:**

1. A method for obtaining data regarding the purchase of an item by a consumer comprising the steps of:

a) providing a machine-readable symbol associated with an item to be purchased, the machine-readable symbol encoded with data comprising information regarding the item purchased;

b) reading the machine-readable symbol with an input device associated with a local computer;

c) storing the data comprising information regarding the item purchased;

d) executing on the local computer a program configured to request information from a consumer associated with the purchase of the item;

e) the consumer inputting the requested information into the local computer; and

f) storing the requested information input by the consumer.

2. The method of claim 1 further comprising the step of providing the consumer with reward incentives in exchange for inputting the requested information.

3. The method of claim 2 wherein the reward incentives comprise permission to play a game on the computer.

4. The method of claim 2 wherein the reward incentives provide the ability for the consumer to access certain content associated with the item purchased.

5. The method of claim 2 wherein the reward incentives comprise a coupon certificate to allow the consumer to obtain additional goods and services at a discount rate.

5 6. The method of claim 1 wherein the information regarding the item purchased comprises a product designation.

7. The method of claim 1 wherein the information regarding the item purchased comprises the size of the item.

10

8. The method of claim 1 wherein the information regarding the item purchased comprises the color of the item.

15

9. The method of claim 1 wherein the machine-readable symbol is a bar code symbol.

10. The method of claim 9 wherein the bar code symbol is imprinted on a tag associated with the item.

20

11. the method of claim 9 wherein the bar code symbol is imprinted on the item.

12. The method of claim 9 wherein the bar code symbol is imprinted on packaging associated with the item.

25

13. The method of claim 1 wherein the data comprising information regarding the item purchased is stored on a remote computer coupled to the local computer via a computer network.

30

14. The method of claim 13 wherein the machine-readable symbol comprises access information suitable for allowing the local computer to automatically connect the remote computer via the computer network.



15. The method of claim 14 wherein the access information comprises a URL of the remote computer.

5 16. A system for obtaining data regarding the purchase of an item by a consumer, the item having associated therewith a machine-readable symbol encoded with data comprising information regarding the item purchased, the system comprising:

10 a) a local computer comprising:  
means for reading the machine-readable symbol;  
means for providing to the remote computer the data comprising information regarding the item purchased;  
b) a remote computer interconnected to the local  
15 computer via a computer network, the remote computer comprising:  
means for receiving and storing data comprising information regarding an item purchased;  
means for receiving and storing information input by  
20 the consumer; and  
means for providing reward incentives in exchange for the consumer inputting requested information.

25 17. The system of claim 16 in which the local computer is associated with a point of sale terminal.

18. The system of claim 16 in which the local computer is located remotely from a point of sale terminal.

30

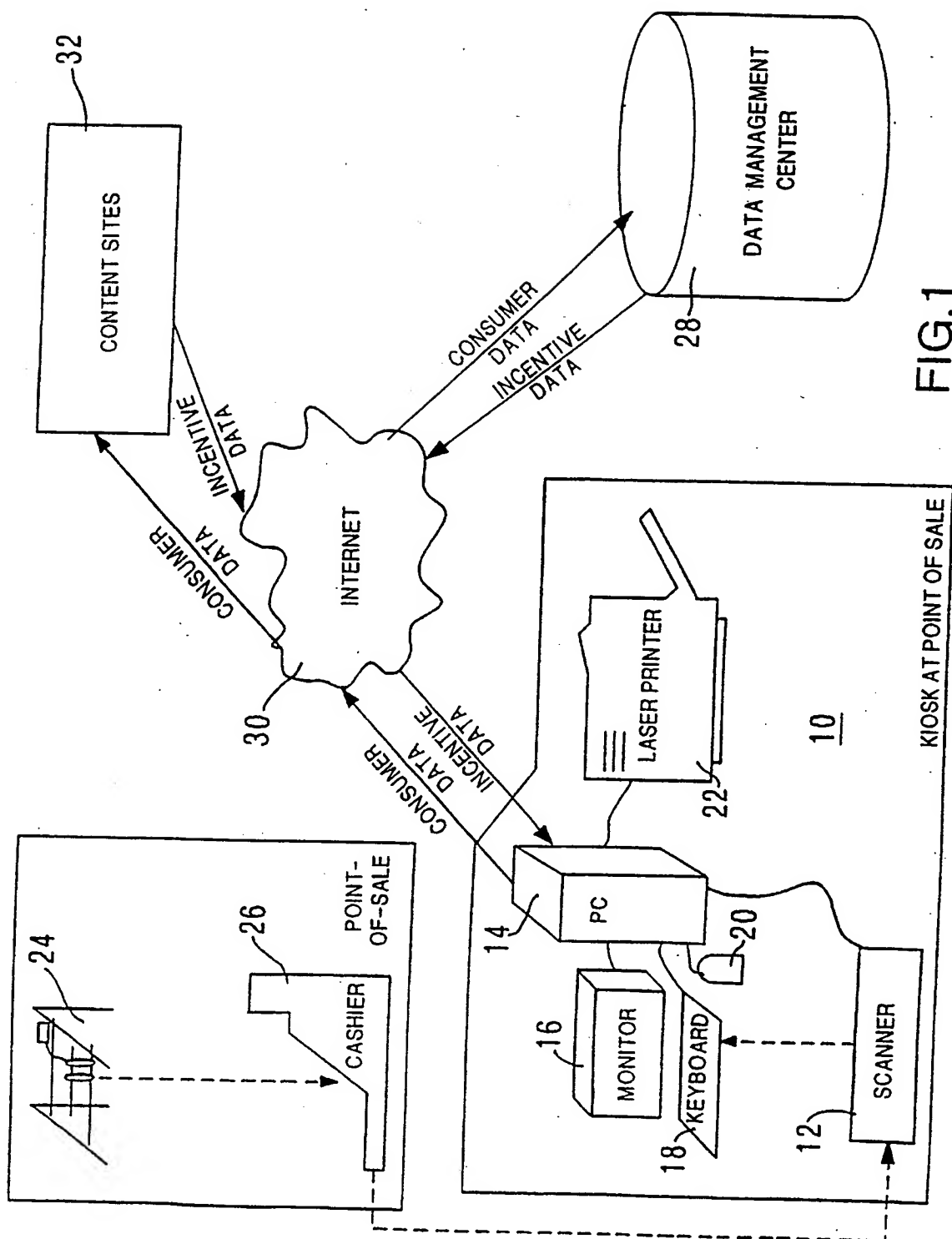


FIG. 1

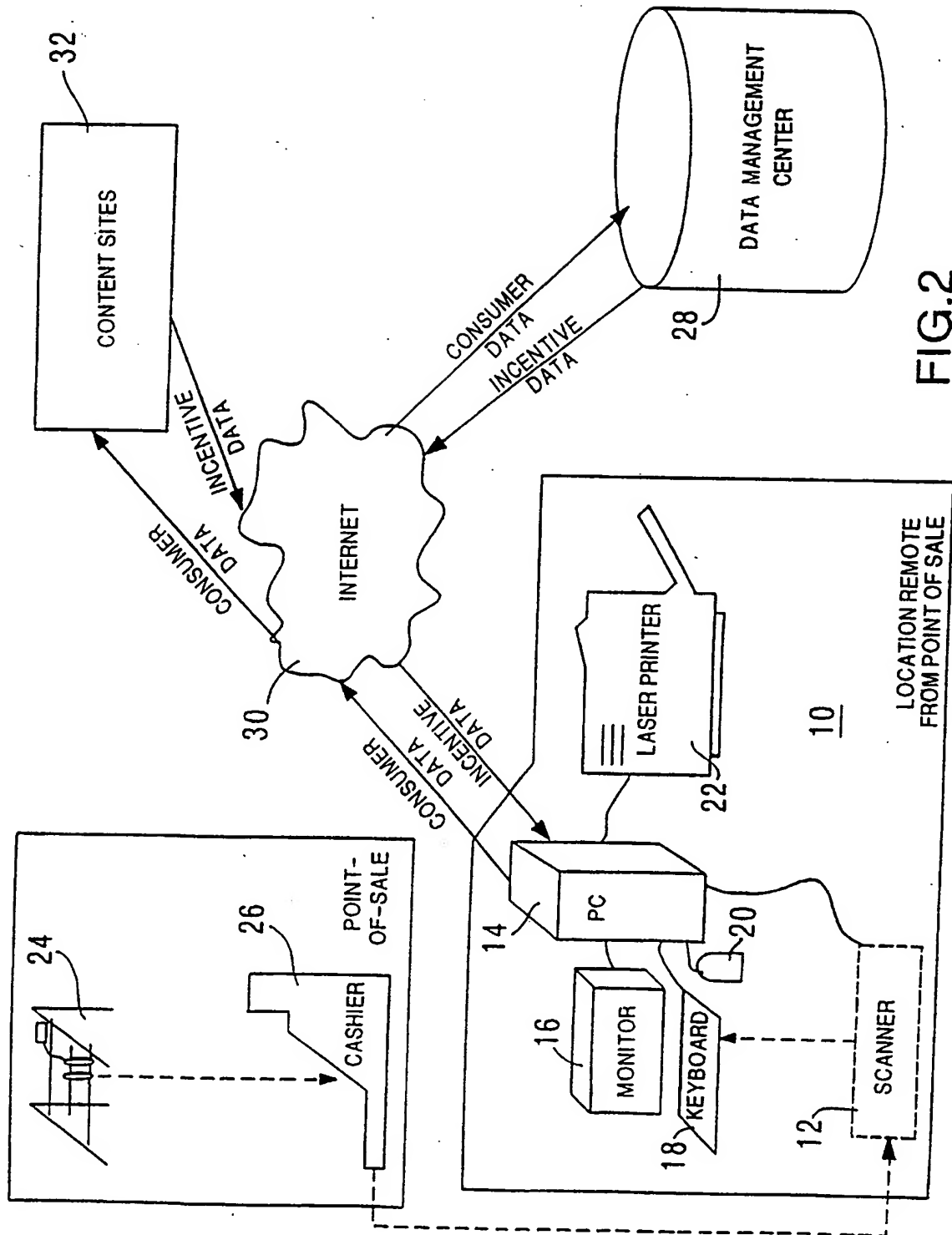


FIG. 2

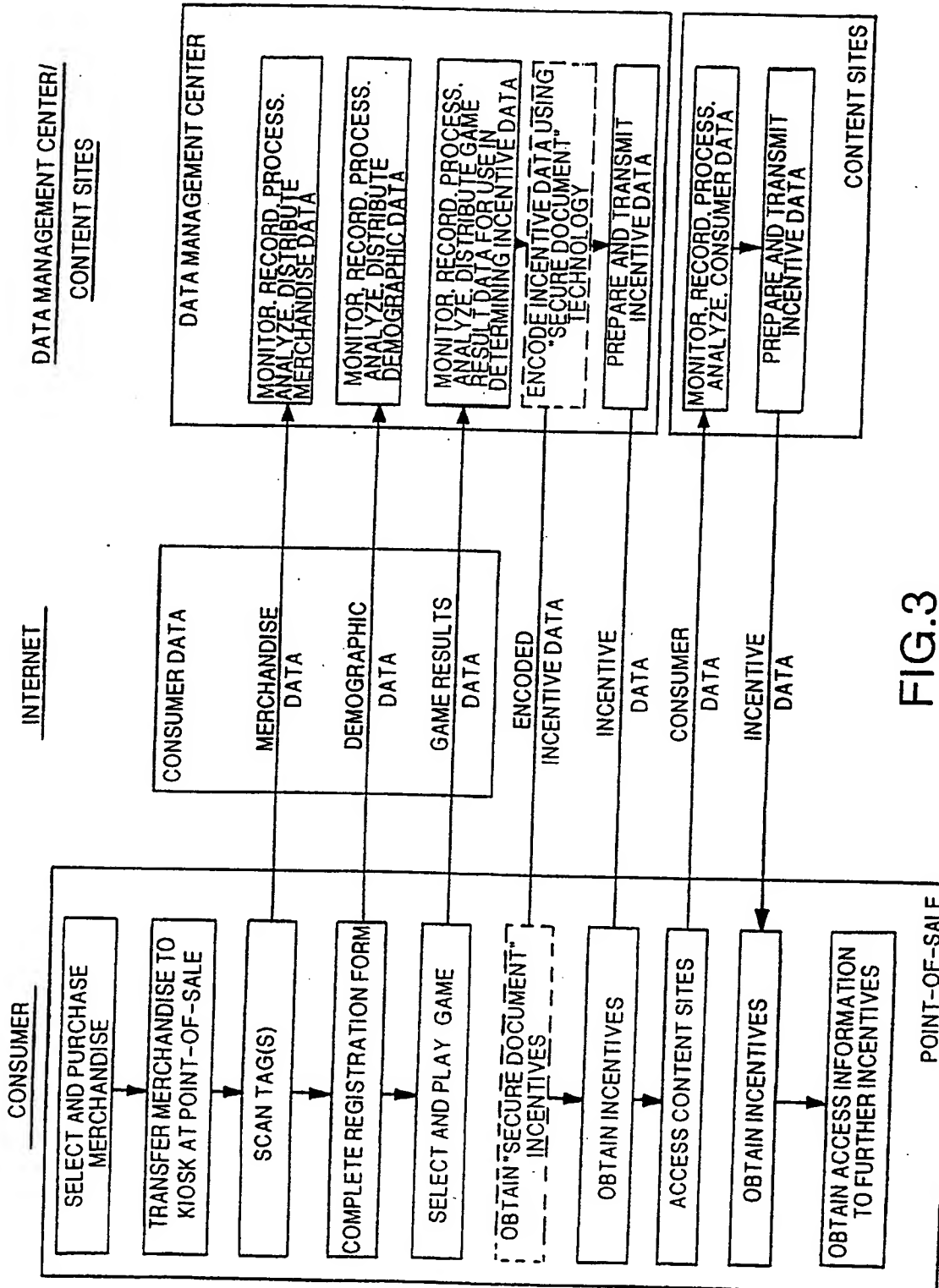


FIG.3

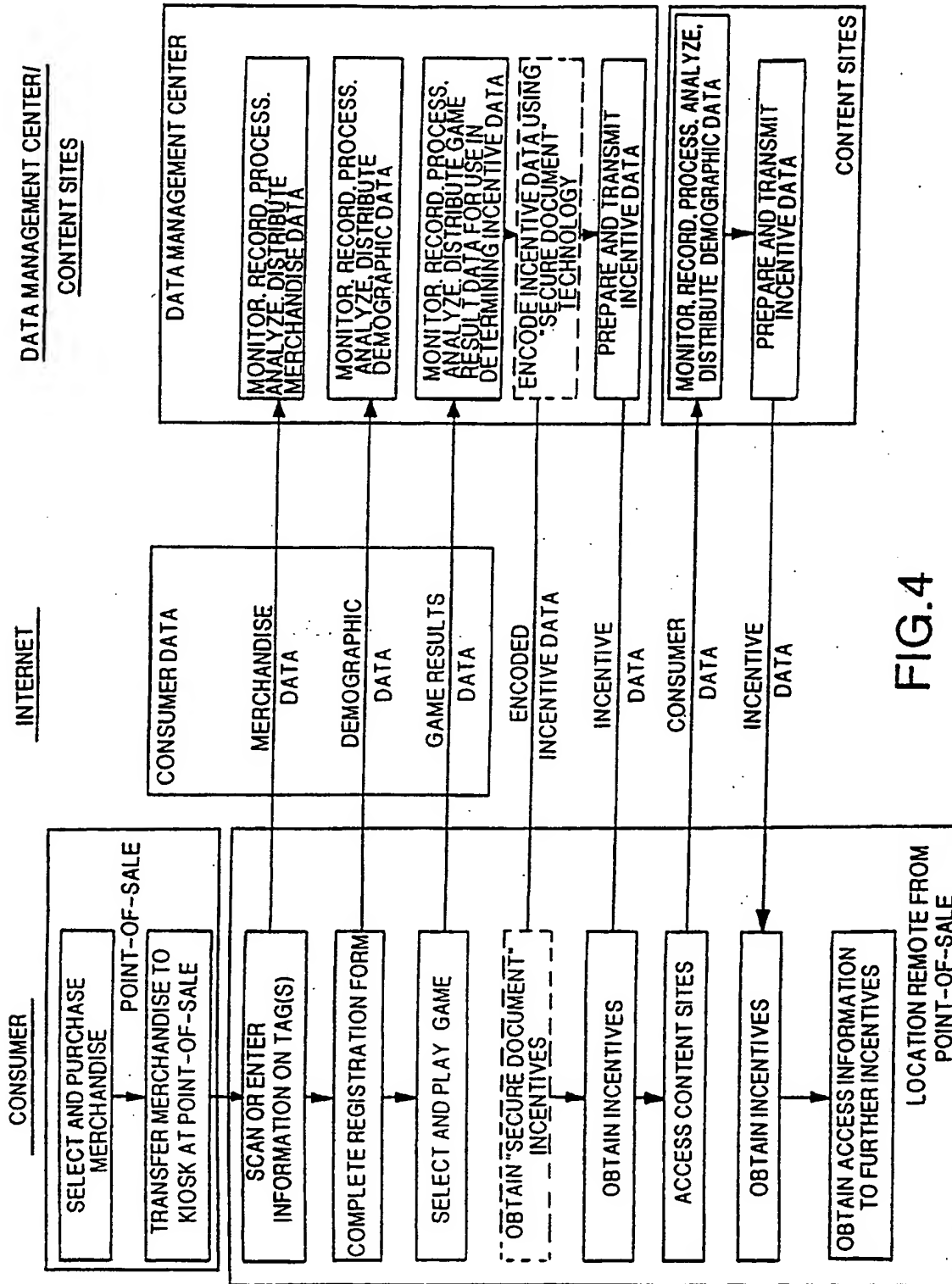
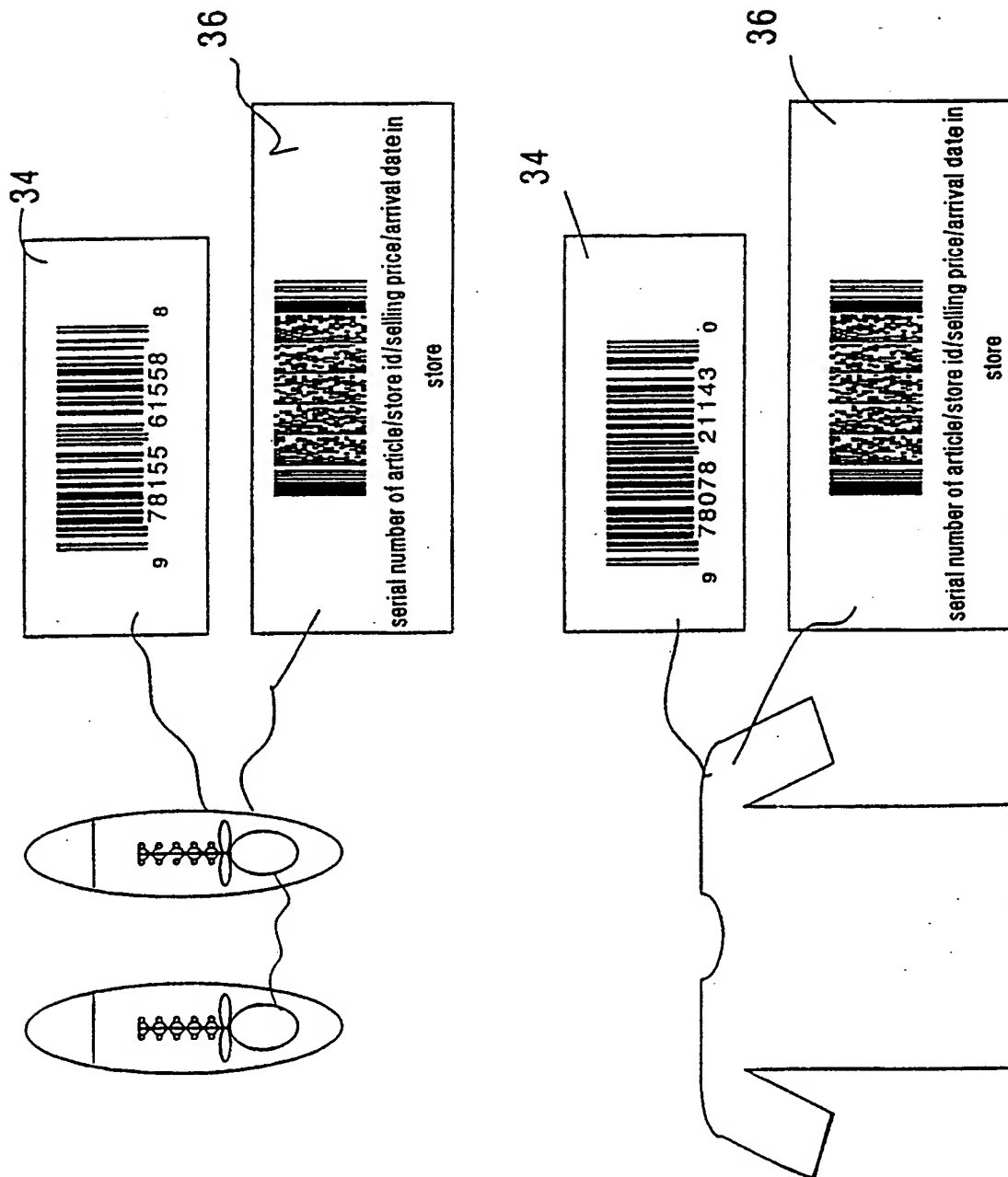


FIG.4



6/6

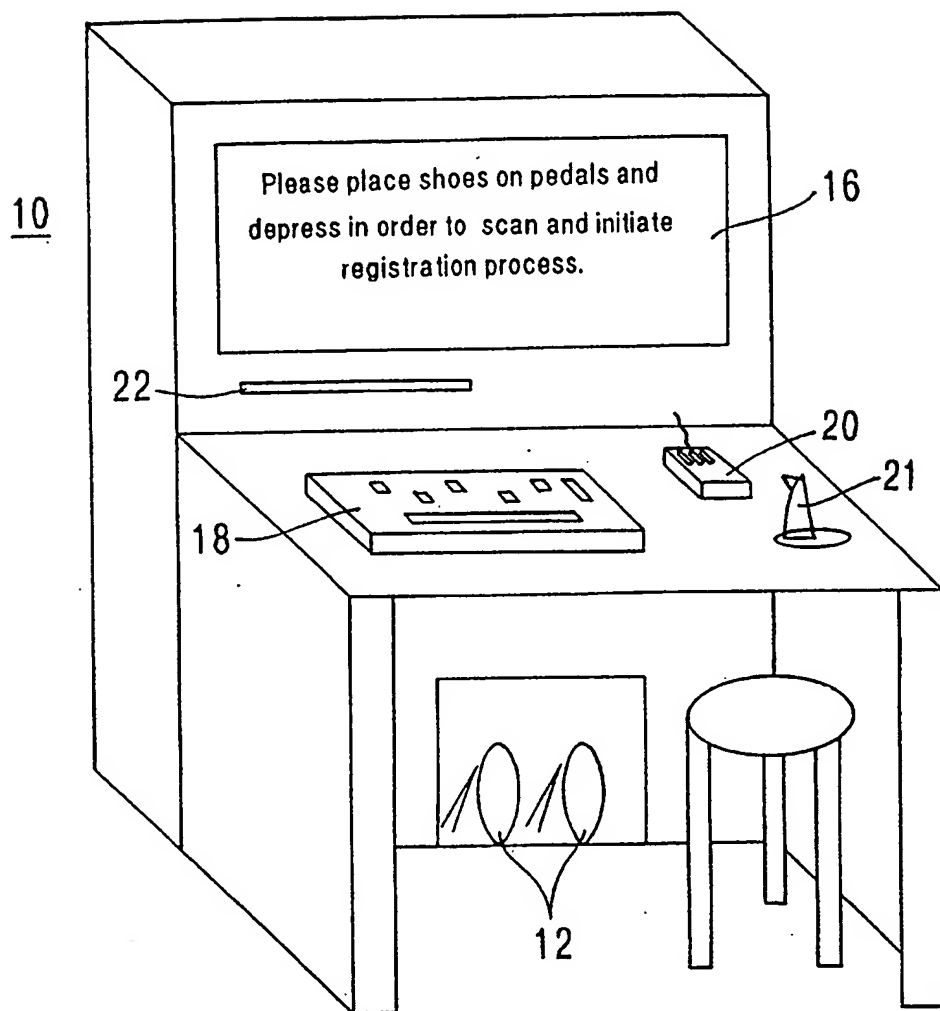


FIG. 6

## INTERNATIONAL SEARCH REPORT

 International application No.  
PCT/US99/16266

| <b>A. CLASSIFICATION OF SUBJECT MATTER</b><br>IPC(6) : G06 F 17/60, 17/00; G06 F 15/00, 15/24, 15/26<br>US CL : 705/10, 14, 16, 17, 21, 26, 27; 235/ 462, 472<br>According to International Patent Classification (IPC) or to both national classification and IPC  |  |   |
|---|--|---|
| <b>B. FIELDS SEARCHED</b><br>Minimum documentation searched (classification system followed by classification symbols)<br>U.S. : 705/10, 14, 16, 17, 21, 26, 27; 235/ 462, 472; 364/ 479.01, 479.03, 479.05<br>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched<br>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)<br>WEST  |  |   |
| <b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>   |  |   |
| Category*   | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.   |
| Y,P   | US 5,918,214 A [PERKOWSKI] 29 June 1999, Note Abstact  | 6-17  |
| Y,P   | US 5,905,248 A [RUSSEL et al.] 18 May 1999, col. 2, lines 40 - col. 3, 1-30  | 9-12,14,15  |
| Y,P   | US 5,857,175 A [DAY et al.] 05 JANUARY 1999, ABSTRACT  | 9-12,17,18  |
| Y   | US 5,774,874 A [VEENEMAN et al.] 30 June 1998, Abstract, col. 3, lines 16-42, col. 4, lines 56 - 66, col. 6, lines 48-68   | 1,2, 4, 5-16  |
| Y   | US 5,237,157 A [KAPLAN] 17 August 1993, Abstract, col. 7, lines 30-col. 8, lines 1-47  | 1, 2, 4, 5-18   |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.  |  |   |
| * Special categories of cited documents:<br>"A" document defining the general state of the art which is not considered to be of particular relevance<br>"E" earlier document published on or after the international filing date<br>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)<br>"O" document referring to an oral disclosure, use, exhibition or other means<br>"P" document published prior to the international filing date but later than the priority date claimed | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention<br>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone<br>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art<br>"Z" document member of the same patent family |   |
| Date of the actual completion of the international search<br>08 NOVEMBER 1999   |  | Date of mailing of the international search report<br>03 DEC 1999                             |
| Name and mailing address of the ISA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, D.C. 20231<br>Facsimile No. (703) 305-3230   |  | Authorized officer<br>TAMMARA PEYTON <i>James R. Matthews</i><br>Telephone No. (703) 305-9717 |



## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/16266

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages               | Relevant to claim No. |
|-----------|--|-----------------------|
| Y         | US 5,047,614 A [BIANCO] 10 SEPTEMBER 1991, col. 2, lines 8-41, col. 3, lines 29-64               | 6-15                  |
| Y         | US 4,982,346 A [GIROUARD et al.] 01 January 1991, Abstract, col. 3, lines 56- col. 4, lines 1-60 | 2, 5, 9-15            |

**This Page Blank (uspic,**